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Geoengineering could damage Earth's eco-systems

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Geoengineering projects to artificially cool our planet have been put forward as a possible solution to global warming. A recent Royal Society study has concluded many such proposals are technically possible and could be effective.

Met Office research into such projects has revealed there could be other knock-on effects from such projects, however, which could potentially damage the Earth's eco-systems.

Many geoengineering schemes seek to artificially reduce the amount of sunlight our planet absorbs. One such proposal is to increase the reflectivity of clouds by 'seeding' them with sea-salt particles. The brighter clouds would then reflect more sunlight, keeping the Earth cooler.

Scientists from the Met Office looked at how this might work in relation to three areas where extensive sheets of low-level cloud exist on a semi-permanent basis — off the west coasts of southern Africa, South America and North America.

By using a state-of-the-art computer model — which tries to recreate the complex physical processes which influence atmosphere and oceans — they looked at what effect seeding these cloud sheets could have.

They discovered that seeding the clouds did have an impact, potentially slowing down global warming by up to 25 years. They also observed that the impacts of seeding the clouds were different in each area, with changes to the South American cloud bank being the most efficient way to slow temperature increases.

There were also side effects of influencing the clouds, however. Seeding off the coast of South Africa leads to a knock-on effect which reduces Amazon rainforest rainfall by 30%. This could accelerate die-back of the forest, which is one of the world's major carbon stores, thus releasing huge amounts of carbon into the atmosphere.

Andy Jones, lead scientist on the study, said: "While some areas do benefit from geoengineering of this sort there are significant regions where the response could be very detrimental, raising questions about the practicality of such a scheme."

The study reinforces the view expressed by the Royal Society that geoengineering projects remain an area of uncertainty and should not be relied upon at the moment to tackle global warming, especially as an alternative to cutting carbon emissions.

Read the full report on geoengineering stratocumulus clouds

See more on geoengineering from the Royal Society

Read the BBC article on 'technically feasible' geoengineering